

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference  GC832-PCT	<b>FOR FURTHER ACTION</b>  see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No.  PCT/US2005/010242	International filing date (day/month/year)  25/03/2005	(Earliest) Priority Date (day/month/year)  25/03/2004
Applicant  GENENCOR INTERNATIONAL, INC.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 7 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. ☒ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box II).

3. ☐ **Unity of invention is lacking** (see Box III).

**4. With regard to the title,**

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

**5. With regard to the abstract,**

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

**6. With regard to the drawings,**

a. the figure of the **drawings** to be published with the abstract is Figure No. 1

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

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Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:
  - a. type of material
    - ☒ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material
    - ☒ in written format
    - ☒ in computer readable form
  - c. time of filing/furnishing
    - ☐ contained in the international application as filed
    - ☐ filed together with the international application in computer readable form
    - ☒ furnished subsequently to this Authority for the purpose of search
2. ☒ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
3. Additional comments:

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**A. CLASSIFICATION OF SUBJECT MATTER**  
C12N9/42 C12N15/62 C12P21/02 C12P21/06

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS, EMBASE, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97/27306 A (ALKO GROUP LTD; MAENTYLAE, ARJA; PALOHEIMO, MARJA; LANTTO, RAIJA; FAGE) 31 July 1997 (1997-07-31)	1-13, 17-53
Y	page 4, line 22 - page 6, line 10 page 24, line 19 - line 21 examples 14-16,21 claims 1-6,11,12,15-20,25	15,16
X	WARREN R A ET AL: "A bifunctional exoglucanase-endoglucanase fusion protein" GENE, ELSEVIER BIOMEDICAL PRESS. AMSTERDAM, NL, vol. 61, no. 3, 1987, pages 421-427, XP002342343 ISSN: 0378-1119 the whole document	1,2,8, 18,33, 35,39

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*G\* document member of the same patent family

Date of the actual completion of the international search

18 January 2006

Date of mailing of the international search report

21/02/2006

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Turri, M

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	BAKER J O ET AL: "A NEW THERMOSTABLE ENDOGLUCANASE, ACIDOTHERMUS CELLULOLYTICUS E1. SYNERGISM WITH TRICHODERMA REESEI CBH I AND COMPARISON TO THERMOMONOSPORA FUSCA E5" APPLIED BIOCHEMISTRY AND BIOTECHNOLOGY, CLIFTON, NJ, US, vol. 45/46, 1994, pages 245-256, XP000672157 ISSN: 0273-2289 cited in the application	53
Y	the whole document	15,16
Y	----- WO 98/31821 A (GENENCOR INTERNATIONAL, INC) 23 July 1998 (1998-07-23) page 3, line 4 - page 4, line 23 examples 7,14-16 claims 1-11,13,17-20,22,24-26,28-34	1-53
Y	----- WO 92/01797 A (OY ALKO AB) 6 February 1992 (1992-02-06) examples 14,17,19	1-53
Y	----- KERÄNEN ET AL: "Production of recombinant proteins in the filamentous fungus Trichoderma reesei" CURRENT OPINION IN BIOTECHNOLOGY, LONDON, GB, vol. 6, no. 6, 1995, pages 534-537, XP002109010 ISSN: 0958-1669 the whole document	1-53
Y	----- BERGQUIST P ET AL: "Expression of xylanase enzymes from thermophilic microorganisms in fungal hosts" EXTREMOPHILES, SPRINGER VERLAG, TOKYO,, JP, vol. 6, no. 3, June 2002 (2002-06), pages 177-184, XP002327848 ISSN: 1431-0651 abstract page 179, right-hand column, paragraph 33 - page 183, right-hand column, paragraph 3; figure 3	1-53
Y	----- DE FARIA F P ET AL: "Expression and processing of a major xylanase (xyn2) from the thermophilic fungus Humicola grisea var. thermoidea in Trichoderma reesei" LETTERS IN APPLIED MICROBIOLOGY, OXFORD, GB, vol. 34, no. 2, 2002, pages 119-123, XP002342344 the whole document	1-53
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International Application No

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>NYYSOENEN E ET AL: "PROTEIN PRODUCTION BY THE FILAMENTOUS FUNGUS TRICHODERMA REESEI: SECRETION OF ACTIVE ANTIBODY MOLECULES" CANADIAN JOURNAL OF BOTANY / JOURNAL CANADIEN DE BOTANIQUE, NATIONAL RESEARCH COUNCIL, OTTAWA, CA, vol. 70, no. SUPPL 1, January 1995 (1995-01), pages S885-S890, XP000575039 ISSN: 0008-4026 the whole document</p>	1-53
Y	<p>NYSSONEN E ET AL: "MULTIPLE ROLES OF THE CELLULASE CBHI IN ENHANCING PRODUCTION OF FUSION ANTIBODIES BY THE FILAMENTOUS FUNGUS TRICHODERMA REESEI" CURRENT GENETICS, NEW YORK, NY, US, vol. 28, no. 1, 1995, pages 71-79, XP008039837 ISSN: 0172-8083 the whole document</p>	1-53
Y	<p>WO 94/29460 A (MIDWEST RESEARCH INSTITUTE) 22 December 1994 (1994-12-22) page 16, line 14 - page 18, line 9; claim 4; figure 2</p>	1-53
A	<p>SHOEMAKER S ET AL: "MOLECULAR CLONING OF EXO-CELLOBIOHYDROLASE I DERIVED FROM TRICHODERMA REESEI STRAIN L27" BIO/TECHNOLOGY, NATURE PUBLISHING, NEW YORK, NY, US, vol. 1, no. 8, October 1983 (1983-10), pages 691-696, XP009019687 ISSN: 0733-222X cited in the application the whole document</p>	
A	<p>WO 96/02551 A (MIDWEST RESEARCH INSTITUTE) 1 February 1996 (1996-02-01) cited in the application the whole document</p>	
A	<p>RIEDEL KATHRIN ET AL: "Intramolecular synergism in an engineered exo-endo-1,4-beta-glucanase fusion protein" MOLECULAR MICROBIOLOGY, vol. 28, no. 4, May 1998 (1998-05), pages 767-775, XP002348990 ISSN: 0950-382X</p>	

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# INTERNATIONAL SEARCH REPORT

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>KNOWLES J ET AL: "CELLULASE FAMILIES AND THEIR GENES" TRENDS IN BIOTECHNOLOGY, ELSEVIER PUBLICATIONS, CAMBRIDGE, GB, vol. 5, no. 9, September 1987 (1987-09), pages 255-261, XP008028328 ISSN: 0167-7799</p>	
A	<p>-----</p> <p>SUURNAKKI A ET AL: "TRICHODERMA REESEI CELLULASES AND THEIR CORE DOMAINS IN THE HYDROLYSIS AND MODIFICATION OF CHEMICAL PULP" CELLULOSE CHEMISTRY AND TECHNOLOGY, BUCHAREST, RU, vol. 7, no. 2, June 2000 (2000-06), pages 189-209, XP008012249</p>	
A	<p>-----</p> <p>PALOHEIMO MARJA ET AL: "High-yield production of a bacterial xylanase in the filamentous fungus Trichoderma reesei requires a carrier polypeptide with an intact domain structure." APPLIED AND ENVIRONMENTAL MICROBIOLOGY, vol. 69, no. 12, December 2003 (2003-12), pages 7073-7082, XP002363277 ISSN: 0099-2240 page 7080, right-hand column, paragraph 4</p> <p>-----</p>	

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2005/010242

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9727306	A	31-07-1997	AU 1547797 A CA 2241968 A1 EP 0876494 A1 ID 15848 A	20-08-1997 31-07-1997 11-11-1998 14-08-1997
WO 9831821	A	23-07-1998	AU 6020598 A US 6265204 B1 US 2003092131 A1	07-08-1998 24-07-2001 15-05-2003
WO 9201797	A	06-02-1992	AU 657911 B2 AU 8093891 A CA 2084189 A1 EP 0539395 A1 FI 925724 A JP 5508768 T	30-03-1995 18-02-1992 17-01-1992 05-05-1993 16-12-1992 09-12-1993
WO 9429460	A	22-12-1994	NONE	
WO 9602551	A	01-02-1996	AU 682125 B2 AU 3098595 A CA 2194478 A1 EP 0771321 A1	18-09-1997 16-02-1996 01-02-1996 07-05-1997